

ENVIRONMENTAL MITIGATION AND MONITORING PLAN (EMMP)

PROJECT/ACTIVITY DATA

Project/ Activity Name:	Malawi <i>Apatseni Mwayi Atsikana Aphunzire (AMAA)</i>
Implementation Start/End:	FY2017 – FY2022
Contract/Award Number:	OAA A 17 00003
Implementing Partner(s):	Save the Children
Geographic Location(s):	Machinga District, Malawi – Matanda
Tracking ID/link of Related IEE:	E3-17-46 (http://gemini.info.usaid.gov/document.php?doc_id=50345)
Tracking ID/link of Other, Related Analyses:	

ORGANIZATIONAL/ADMINISTRATIVE DATA

Implementing Operating Unit(s): (e.g. Mission or Bureau or Office)	USAID E3/GenDev
Lead BEO Bureau:	E3
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Date Prepared:	October 25, 2017
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Date Submitted:	

ENVIRONMENTAL COMPLIANCE REVIEW DATA

Analysis Type:	EMMP
Additional Analyses/Reporting Required:	

PURPOSE

Environmental Mitigation and Monitoring Plans (EMMPs) are required for USAID-funded projects when the 22CFR216 documentation governing the project (e.g., the Initial Environmental Examination [IEE]) imposes mitigation measures on at least one project or activity. EMMPs ensure that the ADS 204.3 requirements for incorporating and monitoring appropriate mitigative measures into project or activity design. Responsibility for developing the EMMP lies with USAID, but EMMPs are usually prepared by the Implementing Partner (IP). EMMPs are typically conducted after the IEE is complete, though they may be completed as part of the IEE. EMMPs are a vehicle for translating IEE conditions and mitigation measures into specific, implementable, and verifiable actions.

An EMMP is an action plan that clearly defines:

1. Mitigation measures. Actions that reduce or eliminate potential negative environmental impacts resulting directly or indirectly from a particular project or activity, including environmental limiting factors that constrain development.

2. Monitoring indicators. Criteria that demonstrate whether mitigation measures are suitable and implemented effectively.

3. Monitoring/reporting frequency. Timeframes for appropriately monitoring the effectiveness of each specific action.

4. Responsible parties. Appropriate, knowledgeable positions assigned to each specific action.

USAID Approval of EMMP

Approval:	Diana Prieto, E3/GENDEV, cleared via email	11/03/2017
	Sylvia Cabus, Activity Manager/A/COR	Date
Clearance:	Robert Matengula, cleared via email	11/02/2017
	Robert Matengula, Mission Environmental Officer	Date
Clearance:	Brian Hirsch as Acting COR, cleared via email	11/03/2017
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1.0 Project/Activity Summary

USAID's primary focus in the Malawi Country Development Cooperation Strategy (CDCS) is on promoting Malawi's self-reliance and economic development, which will lead to increases in the quality of essential services. The delivery of quality education services and the resulting increase in learning levels will strengthen the impact of investments in education and lead to improved human resource capacity to deliver other services such as health, agriculture and food security, decreased dependence on humanitarian assistance, and increased ability of the people to make a positive contribution in the economy. Education is the foundation to social, economic and political development. A productive, educated human resource base is essential to Malawi achieving its development goals. Girls are an important target in achieving CDCS objectives.

Since Malawi introduced free primary education in 1994, the numbers of boys and girls enrolling in the first four years of primary school has grown exponentially; however, girls tend to fare worse than boys in examinations. Despite progress made to date, only a small percentage of girls and boys can go to secondary school due to a lack of schools and trained teachers, and once there, more girls drop out than boys. As such, many girls are leaving the education system without having attained basic literacy, numeracy, or essential life skills, making them more dependent on marriage and a husband's support. Societal norms that lead to gender inequalities make girls responsible for the majority of household chores, resulting in them arriving late to school or reducing time for homework, causing them to fall behind. This gender bias and societal perception of what a girl's role can and should be and what she is capable of also influences whether a guardian will allocate scarce resources to support a girls' education. Sexual violence and abuse, the lack of sexual and reproductive health knowledge and youth-friendly services, and girls' inability to negotiate safe sex due to restrictive gender norms can mean many girls are forced to drop out of school due to pregnancy. Education quality also acts as a barrier to enrolment and retention. Nearly half of the current cadre of secondary school teachers do not hold a professional education qualification – either a certificate, diploma or degree.

Overall AMAA Site Selection Methodology

Machinga District is highlighted in USAID/Malawi's CDCS as one out of the three focus districts for full integration among the Economic Growth, Education, Health, and Food for Peace programs. Within Machinga district, communities were selected based on 15 criteria, such as the number of villages that would feed into the school, the number of children in the area selected for secondary school, and whether a community had contributed to the construction of school blocks (see Annex B for a crosswalk of each community in Machinga and the 15 criteria). School sites were also selected so that at least 50 percent of their planned 200 students will be female. The first-round of selected communities in Machinga are Kayuni, Matanda, and Ntalala. Specific coordinates for and Google Earth views of the selected Machinga sites can be found in Annex C. Mzimba district was selected for construction of a girls' dormitory as an entry point for USAID into working in the education sector in northern Malawi. The Government of Malawi's Education Division identified three CDSSs that would benefit from the construction of a girls' dormitory by Save the Children. The schools that were chosen as they already had boarding facilities. The selection among the three was done in consultation with Save the Children using the guiding principles: 1) the school should have land where the dormitory could be constructed; 2) the community around the school must be active and demonstrate some spirit of self-help; and 3) that there was a community initiative to construct a girls' dormitory. Mpherembe qualified as there were already some brick kilns in the community, the community had previously built a girls' dormitory on their own, and the school had a lot of land where the dormitory could be constructed.

Construction of Community Day Secondary Schools (CDSS). Three new CDSSs will be built in Machinga District (200 students each – at least half being girls) in the communities of Kayuni, Matanda, and Ntalala. These schools will be constructed in year 1 and be occupied in September 2018. An additional two schools, not yet identified, will be built in year 2 to be occupied, at the latest, in January 2019. All schools will have a total of three buildings: two buildings will consist of two classrooms each; and one building for a laboratory that includes a storage space for materials. New latrines will be constructed for girls, boy, and staff at all sites. New water sources will be constructed if there is not one currently available or there is an inadequate supply of water at the site.

Construction of Teachers' Houses. Houses for teachers will be constructed by community members in the selected Machinga District sites with guidance and materials provided by Save the Children under the AMAA program.

Construction of a dormitory. A one room 56-bed female dormitory will be constructed at Mpherembe CDSS in Mzimba North District by a contracted construction company. Two ablution areas will be at one end of the 50-bed dormitory room. A competitive procurement process for the dormitory construction will be used with a planned completion date of September 2018.

Summary of Baseline Conditions in Machinga District

Machinga is a district in the Southern Region of Malawi. The capital is Machinga. The district covers an area of 3,771 km² and was projected in the 2008 census to have a population of over 560,000 in 2013.¹ Machinga's population density has increased in two decades from 80 to 130 people per km². Three-fourths of households have an improved drinking water source. Nine-tenths of households use a wood-base for cooking while only one in 15 has access to electricity. Completion of secondary school is low with just one in 15 men and one in 30 women completing it. Two-thirds of the population is under 25 years of age.² The most prominent health care service in Machinga District is the Machinga District Hospital in Liwonde. Numerous health clinics are scattered throughout the district.

Human Safety Concerns

Cholera is present in Machinga even if there are no current outbreaks. In December 2015, Machinga had a cholera outbreak that was responded to quickly by UNICEF.³

Human trafficking of albino body parts, for the sex trade, and for indentured workers occurs in Machinga. Amnesty International documented several cases of trafficking in human body parts from albinos in recent years.⁴ Upon consultations with the communities around the proposed AMAA CDSS sites during the USAID/GEMS site visits 5-9 June 2017, each community reported that human trafficking was not an issue. Each community separately identified the same area in the district that was known for trafficking that was not in proximity to the proposed AMAA CDSS sites.

Earthquakes, floods, drought, strong winds, hailstorms, and landslides are natural disasters that have afflicted in Machinga in recent decades.

¹ Social Economic Profile and District Development Framework 2013-2018, Machinga District Council.

² Population Reference Bureau, Smaller Families Healthier Families in Machinga District (<http://www.prb.org/pdf14/Machinga-district-infographic-English.pdf>).

³ UNICEF Malawi Humanitarian Situation Report, Report No. 1, 2016.

⁴ Amnesty International "We are not Animals to be Hunted or Sold": Violence and Discrimination against People with Albinism in Malawi, 2016.

Environmental Considerations

Machinga District is home to large parts of Liwonde National Park, Liwonde Forest Reserve, and Malosa Forest Reserve, has parts of four bodies of water within its boundaries: Lake Chilwa, Lake Chiuta, and the Upper Shire River, and hosts a variety of wetlands in the southeast and northeast.

Liwonde National Park

The park is about 212km². It is host to an abundance of flora and fauna. A mopane woodlands ecosystem dominates the park with its 12m high canopy. The park has a high density of both elephants (*Loxodonta africana*) and hippos (*Hippopotamus amphibius*) along with a variety of ungulates, smaller mammals. In much smaller numbers, the park does have black rhinos (*Diceros bicornis*), lions (*Panthera leo*), leopards (*Panthera pardus pardus*), and spotted hyenas (*Crocuta crocuta*).

During the USAID/GEMS site visits of 5-9 June 2017, none of the selected communities in Machinga District reported wildlife conflicts in recent years and none reported bushmeat being sold in their markets. Each site is sufficiently far from the Liwonde National Park, which, as of a few years ago, is surrounded by a 3m fence.

The Matanda construction site (~19,810m²) is located at the southern edge of Machinga district and does not border any protected areas (15°13'22.44"S 35°26'57.12"E). Government reserves are >5km from the site. The nearest health posts are within 20km in Namasalima and Mposa.⁵ The community's main cultural site and graveyard are <100m from the site along the construction vehicle route on the main road that is adjacent to the construction site. The existing primary school is located across the main dirt road. The central part of the community is ~500m away. There are eight compounds (of two to three buildings each) around the perimeter of the site, with six buildings on-site that are used by the primary school's headmaster and deputy headmaster.

This site's land is gently sloping up from the north to south at approximately 4% (estimated by a 1m rise over ~25m), cresting in the middle of the property and sloping downward at the same slope to the end of the property. The land is currently being farmed for maize and cassava. Young blue gum trees (dia. of 15-20cm) are scattered (not grouped) about the property with a few young, but fruiting, mango trees. The soil is clay.

A borehole is located on-site that is used for the primary school and is ~15m in depth. The nearest latrines are in nearby compounds and at the primary school. Latrine depths are at least 3m. The nearest surface water body, a year-round river, is >2km away and at an elevation >3m below the proposed construction site. The water table at site is unknown but estimated, based on elevation, distance to surface water, and depth of adjacent borehole, to be low enough to not be of concern.

Local materials to be used are clay and sand. Clay will be sourced on site. Community members currently source sand from the middle of a river (not the banks), which is 0.5m deep at most during the dry season and does not contain any wildlife other than small fish. Construction routing will be along the main road. Wood will be purchased from a company in Liwonde.

In June 2017, USAID, in conjunction with expert consultants and IP Save the Children, conducted land tenure discussions with the communities of the potential schools to confirm that there are no significant land tenure problems, or that the land has no substantial encumbrances. During these land tenure discussions at Matanda on June 5th, 2017, it was discovered that the proposed piece of land at Matanda is partly owned by the primary school, but 70 percent of the land was being used by four people. At the time of the land tenure discussions, each of the four people had been given alternative land where they could grow their crops. One PAP had not yet seen the allocated alternative piece of land but the rest had. Two other PAPs were satisfied with the pieces of land that they

⁵ Medicins Sans Frontiere Map of Machinga (<http://reliefweb.int/map/malawi/malawi-machinga-district-basemap>).

had been allocated and were ready to move as soon as possible. The remaining PAP thought that she has been given only half of the size of the land that she currently owns.

2.0 EMMP for Malawi AMAA – Matanda Site

2.1.1 EMMP table for Malawi AMAA – MATANDA SITE – Land Acquisition Activities					
Environmental Risks or Potential Adverse Impacts	Environment and Climate Mitigation Measure(s) [adapted from AMAA IEE Conditions]	Monitoring Indicator(s)	Monitoring Method	Monitoring and Reporting Frequency	Responsible Parties
Potential exclusion of project affected people	Invite all potential project affected people to take part in consultative processes	# of interviews with project stakeholders conducted	Review documentation from stakeholder process	When submitted	Construction manager
	Invite all community leaders and related government officials to take part in consultative processes	Existence of a stakeholder participatory list with contact information	Contact legitimate tenure claimants from stakeholder process to confirm participation		
	Divide community leaders and government officials from project affected people to ensure all claims are heard	# of people identified during consultative process with legitimate tenure claims to proposed site			
Potential impact on undeveloped land through in-kind compensation	Follow up with the community is needed to resolve the community's handling of in-kind compensations	# of legitimate tenure claimants that received equitable in-kind compensation	Review stakeholder consultation documentation	When submitted	Construction coordinators
	Identify amount of legitimate tenure claims over the proposed site				
	Identify nearby suitable and equitable land NOT in a sensitive ecosystem to provide as compensation to claimants and NOT already claimed by others	Area of land provided during in-kind compensation	Contact individuals from stakeholder process to confirm compensation received		
		Area of land requiring clearing of vegetation			

2.1.1 EMMP table for Malawi AMAA – MATANDA SITE – Land Acquisition Activities					
Environmental Risks or Potential Adverse Impacts	Environment and Climate Mitigation Measure(s) [adapted from AMAA IEE Conditions]	Monitoring Indicator(s)	Monitoring Method	Monitoring and Reporting Frequency	Responsible Parties
Lack of proof of ownership may inhibit construction or endanger long-term claims to the land	Signed agreements with community leaders approving land for AMAA school use	# of community leaders signing an agreement for the approval of land for AMAA school use	Receipt of copies of agreements (match signed claimants to consultative process identified claimants)	One time – Prior to Commencement of Construction	Construction manager
	Signed agreements between community leaders and claimants releasing claim to school property	# of legitimate tenure claimants agreeing to release claims to school property			
	Signed agreements between community leaders and claimants ensuring claimants long-term use of in-kind land	# of legitimate tenure claimants receiving long-term agreements with community leaders for use of in-kind land			
2.1.2 EMMP FOR MALAWI AMAA – MATANDA SITE – CDSS PRE-CONSTRUCTION ACTIVITIES					
Environmental Risks or Potential Adverse Impacts	Environment and Climate Mitigation Measure(s) [adapted from AMAA IEE Conditions]	Monitoring Indicator(s)	Monitoring Method	Monitoring and Reporting Frequency	Responsible Parties
Non-compliance with Malawian Government can lead to unintended environmental and legal consequences	Obtain permission from the Environmental Affairs Department (EAD) to undertake this construction project prior to breaking ground	Either: 1) An EAD waiver; 2) Letter from the EAD Director stating no EIA is required for this project; or, 3) Completed EIA	Approved document from EAD that the project team has satisfied the Government of Malawi’s requirements for construction	When submitted (prior to construction activities)	Save the Children to have USAID review documentation before submittal.

2.1.2 EMMP FOR MALAWI AMAA – MATANDA SITE – CDSS PRE-CONSTRUCTION ACTIVITIES					
Environmental Risks or Potential Adverse Impacts	Environment and Climate Mitigation Measure(s) [adapted from AMAA IEE Conditions]	Monitoring Indicator(s)	Monitoring Method	Monitoring and Reporting Frequency	Responsible Parties
A changing climate and Machinga-specific natural disasters can negatively impact infrastructure if not planned for	Designs to bolster buildings against:	A completed and engineer approved construction design for ALL buildings that address the potential for severe weather and natural disasters	Receipt of draft design	When submitted	Save the Children AMAA Construction Manager
	1) Stronger Winds - reinforced roof and windows;		Receipt of final design	When submitted	
	2) Heavier Rains – gutters that overhang the walls to reduce erosion and other erosion control measures;				
	3) Hail Storms – reinforced roof and windows, and construction bricks that will not be damaged by hail;				
	4) Increasing Temperatures – improved ventilation to quickly remove heat; and,				
	5) Earthquakes – reinforced foundation and walls.				
Poor site planning can lead to degradation of nearby natural resources	No building to be constructed within 30m of a slope greater than 5% to prevent erosion from runoff	A completed and engineer approved site plan for ALL buildings	Receipt of draft design	When submitted	Save the Children AMAA construction Manager
	Plan to include vegetation locations (i.e. trees) to avoid unnecessary destruction of vegetation		Receipt of final design	When submitted	

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Environmental Risks or Potential Adverse Impacts	Environment and Climate Mitigation Measure(s) [adapted from AMAA IEE Conditions]	Monitoring Indicator(s)	Monitoring Method	Monitoring and Reporting Frequency	Responsible Parties
Lack of professional design can endanger the longevity of the infrastructure and the health of the construction workers	Engineering firm contracted to design the CDSS must be licensed in Malawi and experienced	Valid and non-expired Malawian engineering license	Receive copy of engineering license	When submitted	Save the children AMAA construction manager
		# of previous contracted and completed construction designs	Contact relevant Malawian government entity to verify license validity	When submitted	
			Receive list of completed contracts from engineering firm	When submitted	
			Contact previous employers of engineering firm to confirm successful completion of work	When submitted (this is all in the technical proposal)	
Lack of appropriate fire prevention design for laboratory can lead to fires that can harm the health of beneficiaries and destroy infrastructure	The laboratory must be designed to resist a fire outbreak due to poor handling of flammable chemicals	# of fire resistant material (defined generally as a material that has been enabled to be nonflammable) implemented in laboratory design	Review laboratory design with EIMU to identify fire resistant materials	When submitted	Save the Children Construction Manager

2.1.3 EMMP FOR MALAWI AMAA – MATANDA SITE – CDSS GENERAL-CONSTRUCTION ACTIVITIES					
Environmental Risks or Potential Adverse Impacts	Environment and Climate Mitigation Measure(s) [adapted from AMAA IEE Conditions]	Monitoring Indicator(s)	Monitoring Method	Monitoring and Reporting Frequency	Responsible Parties
Substandard construction materials can lead to infrastructure failure, damage to the environment, and risk the health of workers and beneficiaries	Oversight measures are to confirm chosen building materials and those used on site are appropriate for construction based on approved design	# of incidences in which construction materials were found to be of sub-standard quality	Spot checks of delivered materials to construction site	Fortnightly	Construction Coordinators with the guidance from construction Manager
			Spot checks of materials combined on site for construction purposes (i.e. testing concrete mixtures)	Fortnightly	
			Planned site inspections		
Poor implementation of construction standards can lead to infrastructure failure, damage to the environment, and risk the health of workers and beneficiaries	Oversight measures are to confirm construction activities are implementing appropriate construction standards based on approved design	# of incidences in which construction standards based on the approved engineering design were NOT followed	Spot checks of construction practices (i.e. all appropriate materials used in foundation, angle of roof trusses, thickness of walls, etc.)	Daily	AMAA construction Coordinators with guidance from Construction Manager
			Planned site inspections		
Non-compliance with IEE during construction can lead to infrastructure failure, damage to the environment, and risk the health of workers and beneficiaries	Oversight measures are to confirm approved site plans are implemented correctly	# of incidences in which approved site plans were NOT followed	Planned site inspections	Each time a groundbreaking will occur for a new building	
Noise disturbance to adjacent dwellings, primary school, and cultural center	Concentrate noisiest types of work and highest frequency vibrations activities into as short a period as possible, and during least disruptive times of day.	# of noise / vibration complaints from community members or primary school teachers	Discussions with community leaders, community members, and primary school	Monthly Bi weekly	Construction Coordinators and Construction Oversight

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Environmental Risks or Potential Adverse Impacts	Environment and Climate Mitigation Measure(s) [adapted from AMAA IEE Conditions]	Monitoring Indicator(s)	Monitoring Method	Monitoring and Reporting Frequency	Responsible Parties
	Avoid, to the extent possible, noisy and high vibration work during Matanda primary school hours in which instruction may be disturbed	Schedule on-site indicating hours in which noisy and high vibration operations may occur	headmaster		Committee
	Avoid, to the extent possible, noisy and high vibration operations during cultural ceremonies at the cultural center and graveyard 100m from construction site		Spot check for noise / high vibration schedule on site		
Use of burnt bricks as construction materials can lead to degradation of natural resources	Avoid the use of burnt bricks as construction materials due to waste of forest resources needed to heat them. Use soil stabilized blocks (SSBs), to the extent possible, to reduce both the need for wood to burn and sand to hold the block together. Concrete blocks are to be used when SSBs are not appropriate structurally to reduce the wastage of wood, even though more sand is used.	% of blocks used in construction that are SSBs	Review construction reports	Monthly	Construction Coordinators
		% of blocks used in construction that are concrete blocks	Site visits		
Adverse impacts on vegetation	Minimize destruction of vegetation during construction activities	# of trees removed	Site visits	Monthly	Construction Coordinators and Construction Oversight Committee
		# of tree saplings replanted	Taking pictures for documentation		
	When a tree is removed, if feasible, relocate the tree on site. Where relocation is not feasible, replant two native tree saplings of an anthropogenically useful tree (i.e. fruit, shade, etc.) on site or nearby with the consent of the Village Natural Resources Management Committee or School Management Committee	Area of disturbed vegetation due to construction activities	Measuring areas of denuded and revegetated lands		
	Revegetate shrubs or grasslands immediately following land disturbance to prevent erosion that would remove topsoil and cause sedimentation	Area of denuded lands revegetated	Request information on the care of revegetated lands		
	Ensure care for replanted / revegetated areas until the vegetation is robust and growing				
Potential for Erosion around Infrastructure	If there is a risk of soil instability, it is necessary to choose another location or install a stabilization/recovery structure	# of building sites relocated due to unstable ground	Check records or ask field teams if and when they had to relocate sites due to unstable ground	Quarterly check on records for when sites were relocated due to unstable ground	Construction Manager and coordinators (AMAA)
	Implement a soil protection system around	# of anti-erosion techniques applied			

2.1.3 EMMP FOR MALAWI AMAA – MATANDA SITE – CDSS GENERAL-CONSTRUCTION ACTIVITIES					
Environmental Risks or Potential Adverse Impacts	Environment and Climate Mitigation Measure(s) [adapted from AMAA IEE Conditions]	Monitoring Indicator(s)	Monitoring Method	Monitoring and Reporting Frequency	Responsible Parties
	infrastructure, stockpiles of materials, and stockpiles of construction waste to protect against wind and water erosion.		Visually inspect construction sites for erosion	Monthly visual inspections for erosion and immediately after storm events	
	Use erosion control measures such as bales (pesticide free bales of agricultural waste) before storm events.	% of foundations that do NOT reach stable ground and have spread footing	Construction workers are to report when foundations do NOT reach stable soil layers or when a spread footing was not put in place	Request of workers to notify Save the Children whenever foundations have been placed on unstable ground and without spread footing	
	Infrastructure foundations must reach stable subsurface, establishing a hard foundation (and with spread footings if needed)	Compaction level records in m-kg/m ³			
Use of heavy Equipment can cause erosion, damage roads, compact soil, contaminate soils, and produce GHG emissions	Minimize use of heavy machinery	Existence of vehicle maintenance protocols	Site visit	Daily reporting in site diaries	Construction Coordinators and Construction Oversight Committee
	Set protocols for vehicle maintenance such as requiring that repairs and fueling occur elsewhere or over impervious surface such as plastic sheeting	# of incidences of vehicle maintenance protocols NOT being followed	Review vehicle maintenance logbook	Fortnightly checks on adherence to vehicle maintenance protocols and heavy machinery use	
	Prevent dumping of hazardous materials (i.e. oil, gasoline, lubricants, coolants, etc.)	# of heavy machinery in use	Review any reports of machinery use and/or speak with construction manager and crew about heavy machinery use		
	Vehicle maintenance must not be conducted within 50m of surface water sources	# of hours per week heavy machinery used			
	Have a soil remediation or removal plan in place in case of spillage				

2.1.3 EMMP FOR MALAWI AMAA – MATANDA SITE – CDSS GENERAL-CONSTRUCTION ACTIVITIES					
Environmental Risks or Potential Adverse Impacts	Environment and Climate Mitigation Measure(s) [adapted from AMAA IEE Conditions]	Monitoring Indicator(s)	Monitoring Method	Monitoring and Reporting Frequency	Responsible Parties
Excavation/ extraction dangers to the environment and personal safety	Fill, sand, and gravel extraction or the purchase of these materials from a vendor who extracts them from waterways or ecologically sensitive areas MUST be limited and avoided as much as possible. Where fill, sand, or gravel can be extracted from sources NEITHER in NOR near water bodies or ecologically sensitive areas, then this is an optimal scenario whereby, as much as possible, all extraction should occur to the extent that NEITHER significant vegetation (e.g. trees) is removed NOR are extraction techniques used that would contaminate ground water.	Verification from contractor that fill, sand, and gravel to be used for construction are being extracted from sources NEITHER in NOR near water bodies from waterways or ecologically sensitive areas, OR , verification from contractor that fill, sand, or gravel to be used for construction are being extracted from water bodies or ecologically sensitive areas plus 1) maps of each site where material will be extracted, 2) the expected quantity of material to be extracted per site, 3) the frequency at which material will be extracted per site, 4) multiple photos per site showing the ecological health of the site before, during, and after each extraction, and 5) the monetary cost estimate of extracting material per site as opposed to purchasing and hauling it in from an on-land quarry.	Monitor adherence to fill/sand/gravel extraction restrictions.	Fortnightly checks on adherence to quarrying plans	Construction Coordinators and Construction Oversight Committee
	WHERE IT IS UNAVOIDABLE that fill, sand, or gravel extraction should occur from waterways or ecologically sensitive areas, the risk of significant environmental impact MUST be minimized by 1) utilizing several points of extraction, 2) employing silt curtains, 3) keeping heavy equipment use within 50m of a sensitive area to a minimum, 4) striking a balance between the negative environmental impact of extracting all material from a site all at once to the cost of extracting small portions of the total numerous times to lessen the environmental shock to an ecological system, and 5) enacting as many material conservation techniques as possible to limit the amount of material needing to be extracted.		Review of maps, photos, extraction rate, and cost per material extraction site.	Fortnightly site visits to quarried areas	
			Planned and unscheduled site visits	Monthly checks on repurposing of materials	
	Recycle unused construction materials or demolition debris to reduce excavation activities		Report from contractor as to use of repurposed materials	One-time confirmation of timber supplier license	
	Cover piles of backfill with plastic sheeting to prevent runoff and use agricultural waste bales or other similar measures around the piles to prevent erosion and sedimentation		Evidence that timber originated from a licensed supplier (picture / photocopy of license, check with relevant Ministry as to license validity)		
	Place fencing around on-site excavation areas	Approximate weight of construction materials or demolition debris repurposed / reused			

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Environmental Risks or Potential Adverse Impacts	Environment and Climate Mitigation Measure(s) [adapted from AMAA IEE Conditions]	Monitoring Indicator(s)	Monitoring Method	Monitoring and Reporting Frequency	Responsible Parties
	Investigate shallower methods for excavation or no excavation at all	% of backfill piles NOT covered with plastic sheeting			
	Fill in clay quarries before abandoning, unless community officials plan to repurpose the clay pit and the pit does not create a health and safety risk while awaiting its new purpose	% of backfill piles WITHOUT erosion control measures in place			
	Control runoff into pits to reduce standing water where mosquitos can breed	% of excavation areas with fencing around them			
	Avoid, to the extent possible, sourcing timber from unsustainable or unlicensed sources (purchasing timber from a middleman who verifiably sources timber from a licensed business is satisfactory)	% of clay removed from previously quarried location			
		# of clay quarries NOT filled in			
		# of pits / excavated areas with standing water			
Fire can damage or destroy infrastructure, machinery, or equipment and can injure or kill personnel		% of timber purchased from a proven licensed and sustainable supplier			
	Set fire prevention and management protocols to include training on how to reduce chances of accidental fires and what to do when a fire appears	# of cubic meters (or buckets) of sand to smother fires per laboratory	Site visits	Monthly	Construction coordinators and construction oversight committee
	Keep at least two full buckets of sand within 10m of any potential fire hazard	# of fire extinguishers	Count fire prevention measures		
	Keep at least one fire extinguisher on-site at all times with at least one person on site trained in its use	# of chemical storage units with fire retardant materials	Review site reports and speak with workers about the number of incidences of fire on site		
	Keep flammable liquids / chemicals locked in a storage unit at all times unless in use				

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Environmental Risks or Potential Adverse Impacts	Environment and Climate Mitigation Measure(s) [adapted from AMAA IEE Conditions]	Monitoring Indicator(s)	Monitoring Method	Monitoring and Reporting Frequency	Responsible Parties
	Use fire resistant or fire retardant materials where fire is a risk instead of normal materials	# of chemical storage units with locking mechanisms # of staff trained in fire prevention techniques # of incidences of unplanned fires			
Potential worker injuries or illness from falls and falling objects, collapses and heavy equipment, flying debris, exposure to toxics such as lead, asbestos, solvents, and cement dust; poor sanitation; heat stress	A written policy regarding worker health and safety and commitment to compliance with host country requirements	Existence of written health and safety policy	Scheduled site visits	Fortnightly visits and interviews	Construction Manager and construction coordinators
	All workers receive a safety and health induction that explains safe work practices, the proper use of personal protective equipment (PPE), and their safety and health protections under law	# of worker safety trainings conducted	Spot site visits Interviews with construction manager	Monthly review of personal protection equipment inventory	
	Internal monitoring system to: 1) conduct regular self-inspections of sites against standards, and 2) tracking violations and accidents	Ratio of personal protection equipment to employed workers	Interviews with workers	Quarterly review of training materials and attendance log	
	Vehicles traveling in communities must adhere to a STC approved speed limit to slow potentially dangerous traffic and install speed humps adjacent to the construction site	# of postings in local languages around perimeter # of speed humps installed adjacent to the construction site	Review of site meeting minutes Inventory review of personal protection equipment		
	Materials hauled in open vehicles must be covered to prevent any material from falling out	# of incidences where open hauling construction vehicles DO NOT cover the materials while in transit			
Poor site management can lead to health risks for workers and	Site boundaries are well-marked and access is actively controlled	% of construction perimeter with opaque fencing	Regular site visit	Monthly	

2.1.3 EMMP FOR MALAWI AMAA – MATANDA SITE – CDSS GENERAL-CONSTRUCTION ACTIVITIES					
Environmental Risks or Potential Adverse Impacts	Environment and Climate Mitigation Measure(s) [adapted from AMAA IEE Conditions]	Monitoring Indicator(s)	Monitoring Method	Monitoring and Reporting Frequency	Responsible Parties
community members	Prevent community members from accessing the construction and excavation sites where hazardous obstacles are present (e.g. use of tall opaque plastic fencing, day and/or night guard, etc.)	# of entrances to construction site	Walk the perimeter of the construction site		Construction Coordinators and construction oversight committee
	Ensure privacy, to the extent possible, of neighbors adjacent to construction sites (e.g. use of tall opaque plastic fencing, non-removal of tall vegetation between construction site and compounds, etc.)	Ratio of entrances controlled with a worker or guard to total number of entrances	Walk the total area of the construction site to make observations		
	Good housekeeping practices are in place to maintain a clean site	On a scale of 1 (extremely dirty) to 10 (extremely clean), rating of site cleanliness			
	Safety signs and posters (at a minimum to mark site boundary, hardhat areas, explosion toxic hazards, etc.)	# of warning signs and posters on site			
	Smoking is banned altogether or restricted to designated smoking area well away from flammable materials	% of total construction workers agreeing not to smoke on-site or near the school			
Lack of hygiene and first aid can be detrimental to injured or sick workers	A first aid kit is on-site and accessible with at least one person always on site that is trained in its use and basic first aid	# of FULL (not empty or lacking) first aid kits on site	Site visit	Monthly check up of first aid kit	Construction coordinators and construction oversight committee
	Drinking water and sanitary facilities are provided (or are easily accessible from the site), including hand-washing stations	# of personnel trained in first aid and first aid kit use	Review any incidences of workers needing to be vaccinated against tetanus	Quarterly check on first aid training, accessibility of hygienic facilities, and vaccination record (whenever new workers are hired)	
	Ensure availability of treatment for construction workers that receive puncture wounds on site in regards to access to a tetanus vaccination. Treatment should be given within 24hrs after exposure	Yes or No access to drinking water and sanitary facilities with handwashing stations			
		% of workers with receiving tetanus vaccinations			

2.1.3 EMMP FOR MALAWI AMAA – MATANDA SITE – CDSS GENERAL-CONSTRUCTION ACTIVITIES					
Environmental Risks or Potential Adverse Impacts	Environment and Climate Mitigation Measure(s) [adapted from AMAA IEE Conditions]	Monitoring Indicator(s)	Monitoring Method	Monitoring and Reporting Frequency	Responsible Parties
Inhalation of particulate matter can cause upper respiratory infections and breathing problems	Limit total hours spent running heavy machinery and diesel engines that create soot	Existence of protocol for limiting heavy machinery or soot producing equipment	Review heavy machinery protocols	Monthly	Construction coordinators and construction oversight committee
	Provide masks capable of filtering out particulate matter of 10 microns to any operator of machinery producing soot or workers debagging cement or workers burning waste	# of hours per week heavy machinery used	Review inventory for ventilated masks capable of filtering 10 micron thickness of particulate matter		
	Debag cement at the farthest point from community members and at the warmest time of day (warmer air carries air contaminants higher into the air dispersing the concentration)	# of ventilation masks on site capable of filtering 10 microns of particulate matter	Scheduled site visits		
	Do NOT debag cement or run soot producing machinery when children are nearby	Distance from debagging site to site perimeter	Interview workers as to use of masks and times of day for operations		
	Confined areas where cement debagging, diesel emissions, or emissions from burned waste occur should NOT exceed 150 microns per square meter of 10 micron particulate matter when personnel is in this area WITHOUT appropriate ventilated masks	# of incidences of personnel debagging cement WITHOUT appropriate ventilated masks			
	Burn waste at the warmest part of the day when NO children are nearby at the warmest time of day (warmer air carries air contaminants higher into the air dispersing the concentration)	Average time of day in which cement debagging and waste burning occurs			
Inadequate Personal Protection Equipment (PPE) can lead to serious injuries among workers	Hardhats are required whenever flying debris may be generated (as in demolition) or there is a risk of tools or objects falling from heat height or higher	Ratio of hardhats available to employed workers	Review personal protection equipment inventory	Monthly review of inventory	Construction Coordinators
	Protective / enclosed footwear (not footwear where toes or parts of the foot are visible AND must have thick soles) are to be worn at all times	# of incidences of workers NOT using protective / enclosed footwear on site	Scheduled site visits	Fortnightly site visits and interviews	
	Hard-toe boots are to be used by all workers engaged in excavation, demolition, or working around heavy	Ratio of hard-toe boots to workers involved in excavation, demolition, or	Spot check site visits		
			Interviews with workers and		

2.1.3 EMMP FOR MALAWI AMAA – MATANDA SITE – CDSS GENERAL-CONSTRUCTION ACTIVITIES					
Environmental Risks or Potential Adverse Impacts	Environment and Climate Mitigation Measure(s) [adapted from AMAA IEE Conditions]	Monitoring Indicator(s)	Monitoring Method	Monitoring and Reporting Frequency	Responsible Parties
	<p>equipment</p> <p>Respiratory protection must be used when: 1) mixing cement or polishing or cutting concrete or stone (2-strap N95 dust mask or better), 2) a worker desires the use of them (2-strap N95 dust mask or better), and 3) activated-carbon half-mask respirator when using solvents</p> <p>Hearing protection is mandatory for all workers using powered tools or working in close proximity to these operations</p> <p>Safety glasses are to be used by all workers engaged in demolition, grinding, cutting, or using power tools, or working in close proximity to these operations</p> <p>Reflective vests are mandatory for all individuals working in proximity to heavy equipment and during demolition</p>	<p>working with heavy equipment</p> <p>Ratio of respiratory protection masks to workers involved in cement debagging, heavy machinery use, solvent use, waste burning, or other activities with chemical emissions</p> <p>Ratio of hearing protection available to workers involved in using powered tools or in close proximity to such operations</p> <p>Ratio of safety glass to workers involved in demolition, grinding, cutting, or using power tools or in close proximity to these operations</p> <p>Ratio of reflective vests to workers in proximity to heavy equipment or involved in demolition</p>	<p>construction manager</p>		
Lack of proper scaffolding and fall protection can lead to serious injury among workers	Scaffolding must be able to carry at LEAST 4 times its maximum intended load without settling or displacement	% of structurally stable scaffolding	Scheduled site visits	Fortnightly inspection of scaffolding and scaffolding documentation	Construction manager together with coordinators
	Scaffolding must be on solid footing (footing may NOT be boxes, loose bricks or stones, etc.)	% of scaffolding with guardrails, midrails, and toeboards	Review of manager scaffolding documentation		
	Scaffolding has guardrails, midrails, and toeboards	% of total days of workers on site where a manager			

2.1.3 EMMP FOR MALAWI AMAA – MATANDA SITE – CDSS GENERAL-CONSTRUCTION ACTIVITIES					
Environmental Risks or Potential Adverse Impacts	Environment and Climate Mitigation Measure(s) [adapted from AMAA IEE Conditions]	Monitoring Indicator(s)	Monitoring Method	Monitoring and Reporting Frequency	Responsible Parties
	Scaffolding inspected EACH DAY by a site manager	inspected scaffolding			
	Guardrails or at least ropes near the edge of floors and roofs where a drop is greater than 2m (if not possible, workers must wear a body harness and rope) – manager MUST document results of inspection	# of trenches NOT in compliance with trench safety measures			
	Trenches are to: 1) have backfill maintained at least 1m back from the trench edge, 2) shore or slope back the trench wall for ANY trench 1.75m or deeper, and 3) provide a means of exit (ladder, stair, ramp) at least every 10m				
Poorly managed trenches, pits, and quarries can lead to serious injury of workers	All backfill maintained at least 1m back from the trench edge	# of incidences where backfill is NOT at least 1m back from the edge of a trench or pit, where trench or pit walls are NOT shored up or sloped back, or where a means of escape is not available for deep excavated areas	Scheduled site visits	Fortnightly visits and checks	
	Shore or slope back the trench or pit wall for ANY excavated area 1.75m or deeper		Spot checks		
	Provide a means of exit (ladder, stair, ramp) at least every 10m for any excavated area				
The use of lead paint or asbestos can lead to serious health risks	Neither leaded paint nor asbestos in any form is to be used in new construction	# of incidences of leaded paint or asbestos observed on site	Scheduled site visits	Spot check paint cans whenever possible on site	Construction manager
			Spot check cans of paint purchased by contractor for containing lead	Quarterly	
			Interviews with construction manager		
Damage to local habitat, compact soil, and create erosion via building and occupation of	<i>Appropriate housing SHOULD be available in the community for workers to avoid construction worker camps</i>	Existence of a site management plan	Scheduled site visits	Fortnightly review of complaints	Construction manager together with coordinators
			Walking the site	Monthly	

2.1.3 EMMP FOR MALAWI AMAA – MATANDA SITE – CDSS GENERAL-CONSTRUCTION ACTIVITIES					
Environmental Risks or Potential Adverse Impacts	Environment and Climate Mitigation Measure(s) [adapted from AMAA IEE Conditions]	Monitoring Indicator(s)	Monitoring Method	Monitoring and Reporting Frequency	Responsible Parties
construction camps	IF a construction worker camp is required:				
	Set a site management plan to reduce negative impacts on the host community entailing security concerns, public health issues, speeding vehicles, waste disposal, energy sourcing, and illegal extraction of natural resources	# of incidences of complaints made to or by the Construction Oversight Committee (a group of community members plus the contractor and the IP)	Review complaints made to or by the Construction Oversight Committee	inspections	
	Keep camp size to a minimum. Require that crew preserve as much vegetation as possible, e.g., by creating defined footpaths	Area of camp Area of denuded vegetation	Review documentation showing that camp workers have been sensitized on HIV/AIDS and tuberculosis symptoms and transmission paths		
	Provide temporary sanitation on site, e.g., pit latrine (assuming the water table is low enough, with soil and geology of appropriate composition)	# of latrines constructed % of latrines constructed and managed as in Section 3.1.2 of this EMMP			
	Use local or regional labor, if possible. Request a government health office, a USAID health partner, or other partner organization to sensitize workers as to the symptoms and transmission paths of HIV/AIDS and tuberculosis	Ratio of local labor to total workers employed			
	Set guidelines prohibiting poaching and collection of plants/wood with meaningful consequences for violation such as termination of employment. Provide adequate quantities of food and cooking fuel; both should be of good quality	% of workers sensitized about HIV/AIDS and tuberculosis # of incidences of construction workers found to be poaching or illegally collecting plants/wood			
	All temporary structures MUST be demolished and completely removed once construction activities have ceased	% of days in which food and cooking fuel is provided to camp residents (if the contractor provides these items)			

2.1.3 EMMP FOR MALAWI AMAA – MATANDA SITE – CDSS GENERAL-CONSTRUCTION ACTIVITIES					
Environmental Risks or Potential Adverse Impacts	Environment and Climate Mitigation Measure(s) [adapted from AMAA IEE Conditions]	Monitoring Indicator(s)	Monitoring Method	Monitoring and Reporting Frequency	Responsible Parties
		% of camp structures remaining when construction is complete			
Improper waste management can be a health hazard to workers, the community, and to the environment	Receive either a waste handling license from the EAD Director or the District Council to destroy or transport construction waste or a waiver from the EAD Director or the District Council	Existence of waste handling license or waiver from the EAD Director or the existence of a letter of approval from the District Council	Scheduled site visits Spot checks	Fortnightly inspections and interviews Quarterly review of documentation	Construction manager and construction coordinators
	Set waste management protocols consistent with community and government approved methods	Existence of waste management protocols	Review of waste management protocols, training materials, and attendance logs		
	All personnel must be trained in waste management protocol	# of incidences where waste management protocols were NOT followed	Inspection of designated waste areas		
	Minimize number and size of open burn pits	% of personnel trained in waste management	Interviews with construction manager and workers		
	Encircle waste pits with visible warning tape	% of waste pits encircled with warning tape			
	Separate hazardous waste, reusable waste, and waste designated to be burned from one-another in separate bins or designated waste areas	# of bins / locations designated to separate types of waste			
	All personnel handling waste must wear appropriate personal protection equipment (i.e. enclosed footwear, gloves, etc.)	# of incidences of personnel NOT wearing appropriate personal protection equipment when handling waste			
	Do NOT leave waste in an open pit overnight, it must be disposed of each day				
	Do NOT use supplemental fuel to burn waste				
	Organize collecting bins that separate reusable waste from non-reusable waste				
	Facilitate separation at the disposal site to improve	# of incidences where waste is found in an open			

2.1.3 EMMP FOR MALAWI AMAA – MATANDA SITE – CDSS GENERAL-CONSTRUCTION ACTIVITIES					
Environmental Risks or Potential Adverse Impacts	Environment and Climate Mitigation Measure(s) [adapted from AMAA IEE Conditions]	Monitoring Indicator(s)	Monitoring Method	Monitoring and Reporting Frequency	Responsible Parties
	probability of reuse	pit at the beginning of work			
		# of incidences where fuel was used to burn waste			
		# of bins designated for reusable waste			
Improper management of hazardous waste (oils, petrol/gasoline, kerosene, solvents, chemicals, lead acid, etc.) can lead to environmental degradation and be a health risk to workers and beneficiaries	Set protocols for managing / handling hazardous waste	Existence of protocols for managing / handling hazardous waste	Site visit	Monthly	Construction coordinators
	Train workers involved in hazardous waste management in site-specific protocols	% of workers trained in hazardous waste protocols	Review of documentation		
	Manage hazardous wastes from creation to segregation to safe handling to disposal and to reduction	# of methods used to safely store hazardous waste	Interviews with construction manager and workers		
	Designate a safe and lockable location on site to store hazardous materials away from flammable materials or equipment	# of times hazardous materials disposed of in government approved locations			
	Safely remove hazardous material and dispose of it at government approved locations				
	As stockpiles can spontaneously combust, reuse or retread or sell tire waste to remove from site				
Improper management of construction waste (old construction materials, logs, debris, etc.) can lead to environmental degradation and be a health risk to workers	Construction waste must NOT be stored or allowed to migrate off site	Approximate weight of construction waste found off-site	Site visit	Monthly	Construction coordinators and construction oversight committee
	Construction waste must be separated from other wastes in a designated and secure location on site		Estimation of amounts of construction waste on and off site	At end of construction	
	De-construct instead of demolishing / destroying construction waste to more easily separate materials	% of non-construction waste mixed in with			

2.1.3 EMMP FOR MALAWI AMAA – MATANDA SITE – CDSS GENERAL-CONSTRUCTION ACTIVITIES					
Environmental Risks or Potential Adverse Impacts	Environment and Climate Mitigation Measure(s) [adapted from AMAA IEE Conditions]	Monitoring Indicator(s)	Monitoring Method	Monitoring and Reporting Frequency	Responsible Parties
and beneficiaries	for disposal or reuse	construction waste			
	Do NOT mix construction waste with soils	Approximate weight of construction waste de-constructed			
	No construction waste can be left on site when construction is completed	Approximate weight of construction waste left on site once construction is completed			
Improperly designed laboratories that contain hazardous liquids and materials may allow for the degradation of the environment and present a health risk to beneficiaries	Security measures must be taken in establishing a storage unit to safeguard chemicals and combustibles	Existence of protocols affixed in the laboratory for handling hazardous liquids and materials and preventing and resolving emergency situations	Site visit	Quarterly	Construction manager
	Protocols for handling hazardous liquids and materials and for emergency situations must be securely affixed in the laboratory		Review of protocols		
	Fire prevention techniques must be incorporated into the design and operation of the laboratory	# of chemical storage units in laboratories WITHOUT a locking mechanism	Inspection of laboratory storage unit		
		# of fire prevention techniques implemented in the laboratory			

2.1.4 EMMP TABLE FOR MALAWI AMAA – MATANDA SITE – WATER SANITATION AND HEALTH ACTIVITIES					
Environmental Risks or Potential Adverse Impacts	Environment and Climate Mitigation Measure(s) [adapted from AMAA IEE Conditions]	Monitoring Indicator(s)	Monitoring Method	Monitoring and Reporting Frequency	Responsible Parties
Poor latrine construction / management can lead to increased vectors for diseases	Ensure latrines, wastewater collection, and sewage systems are designed and constructed to WHO and national standards	# of latrines, that do NOT meet WHO and national standards	Inspections of latrines and the site around the latrines	Fortnightly inspections	Construction manager and coordinators
	Use the ventilated improved pit latrine design that traps insect vectors or convert pit latrines to this design when in use on site	% of latrines that are ventilated improved pit latrines	Assessment of the management of latrines	Monthly assessments	School Management Committee (STC to work with them)
	Gather data on soil type, slope and topography to determine the potential for significant erosion	# of pit latrines constructed on construction sites	Interviews with workers as to latrine use practices and trainings received	Quarterly document review and monitoring for FOUR quarters post-construction (either by government counterparts, coordinated efforts with other USAID partners, or IP contracted monitors)	
	Train designated workers and community members on proper use and maintenance of latrines to avoid spills, leaks, and exposure	# of workers and community members trained in latrine maintenance	Review documentation of training records		
	Devote adequate attention to identifying and addressing social barriers to using latrine	# of reports of waste being applied to agricultural fields			
	Raise awareness among community members on proper maintenance and cleaning of latrines and on hand washing with soap after using a latrine in line with WHO guidelines	# of incidences of reported open defecation near latrines and sanitation facilities			
Changing climate, extreme weather events, and natural disasters can degrade or destroy improperly	Latrine design MUST account for a changing climate, chances of severe weather, and natural disasters	A completed and engineer approved construction design for latrines and water supply points that address the potential for severe weather and natural disasters	Receipt of draft design	When submitted	Construction Manager
	Water supply design MUST account for a changing climate, chances of severe weather, and natural disasters		Receipt of final design	When submitted	

2.1.4 EMMP TABLE FOR MALAWI AMAA – MATANDA SITE – WATER SANITATION AND HEALTH ACTIVITIES					
Environmental Risks or Potential Adverse Impacts	Environment and Climate Mitigation Measure(s) [adapted from AMAA IEE Conditions]	Monitoring Indicator(s)	Monitoring Method	Monitoring and Reporting Frequency	Responsible Parties
constructed latrines and water sources that would lead to increased health risks					
Poor latrine accessibility/availability can lead pupils to defecate outdoors, to not practice good hygiene, or to not attend school	WHO recommends no more than 25 pupils per latrine	# of male and female latrines, separated	Latrine construction documentation review	Quarterly	
	The Government of Malawi allows for a maximum of 60 pupils per latrine IF separate urinals are accessible As the project is targets improving education accessibility for adolescent girls and Malawian schools are often overcrowded beyond the planned pupil population, it is recommended a ratio of 20 and 10 female pupils per latrine WITH and WITHOUT urinals, respectively.	# of male and female urinals, separated	Count latrines on site		
Poor water supply construction/management can lead to drinking water contamination and health risks to beneficiaries	Obtain a water abstraction Community Project license from the National Water Resources Authority before water point construction	Existence of valid license for water abstraction	Receive copy of valid water abstraction license	When license is submitted	Construction manager together with coordinators
	Set use and maintenance protocols for constructed water points	Existence of use and maintenance protocols	Review documentation on protocols and trainings	Fortnightly inspection of water source	School Management Committee (with STC guidance)
	Provide community awareness to instruct on proper usage and maintenance in collaboration with the School Management Committee	# of community members trained in use and maintenance of the constructed water source	Site visits to inspect water source	Quarterly review of documentation and monitoring for FOUR quarters post-construction (government counterparts, coordinated efforts with other USAID partners, or IP contracted monitors)	
	Do NOT allow domesticated animals within 10 meters of drinking water sources	Area around water source secured from animals			
	Do NOT allow stagnant water puddles (> 1 liter) within near the water source	# of stagnant water puddles (> than a liter) due to animals within 10 meters of a project structure			

2.1.4 EMMP TABLE FOR MALAWI AMAA – MATANDA SITE – WATER SANITATION AND HEALTH ACTIVITIES					
Environmental Risks or Potential Adverse Impacts	Environment and Climate Mitigation Measure(s) [adapted from AMAA IEE Conditions]	Monitoring Indicator(s)	Monitoring Method	Monitoring and Reporting Frequency	Responsible Parties
Poor water supply accessibility/availability can lead to pupils and staff drinking contaminated waters	Ensure WHO recommendations for any water supply built by Save the Children are followed: 5 liters of drinking water available per day for each pupil and school staff member ⁶	Pump rate (liters per minute)	Scheduled pump rate testing	Inspect each water quality testing procedures over the course of the project	Construction Manager
		Water supply regeneration rate (liters per day)	Scheduled multi-day water supply regeneration rate testing		
	Determine sustainable withdrawal rates of water resources	Existence of a WQAP		Quarterly checks of the adherence to the WQAP and site inspections and monitoring for FOUR quarters post-construction (government counterparts, coordinated efforts with other USAID partners, or IP contracted monitors)	
	Monitor water levels in well boreholes, catchments, or impoundment structures to detect overdrawing	Select a government approved water testing laboratory to send water samples to	Review WQAP		
	Develop a Water Quality Assurance Plan (WQAP) ⁷ per USAID guidance		Review monitoring documentation		
	Ensure appropriate WQAP monitoring, as this is the responsibility of the IP, occurs throughout the life of the project either via government counterparts, coordinated efforts with other USAID partners, or IP contracted monitors	# of incidences where the WQAP was NOT adhered to	Verify the selected water laboratory's certification		
	Ensure safe levels of arsenic, fluoride, nitrate, and other contaminants as well as the absence of fecal coliform, all per WHO and Malawian government standards	# of water quality tests (for each chemical or biological category listed in the WQAP) that VIOLATE WHO's or the Government of Malawi's standards			
	# of water quality tests (for each chemical or biological category listed in the WQAP) that are worse than the initial baseline water quality test				

⁶ http://www.who.int/water_sanitation_health/publications/wash_standards_school.pdf

⁷ <http://www.usaidgems.org/wqap.htm>

2.1.4 EMMP TABLE FOR MALAWI AMAA – MATANDA SITE – WATER SANITATION AND HEALTH ACTIVITIES					
Environmental Risks or Potential Adverse Impacts	Environment and Climate Mitigation Measure(s) [adapted from AMAA IEE Conditions]	Monitoring Indicator(s)	Monitoring Method	Monitoring and Reporting Frequency	Responsible Parties
Poor bathing accessibility/ availability can lead to unhygienic practices by pupils and staff	WHO standard for 20 beneficiaries (student and residential staff) per shower / bathing stall is recommended ⁸	Ratio of beneficiaries to shower / bathing stalls	Construction plan review	When shower / bathing block design is submitted	Save the Children
Poor hand-washing accessibility/ availability can lead to unhygienic practices and to the spread of fecal-oral diseases	Hand-washing station must be within 1.5m of latrine exit	# of incidences where the hand-washing station is NOT within 1.5m of latrine exit	Site visit	Monthly	Save the Children and the School Management Committee
	Cleansing material (soap, ash, etc.) must be readily accessible and securely connected to hand-washing station to allow for use but prevent thievery	% of handwashing stations WITHOUT secure cleansing material available		Quarterly maintenance checks for FOUR quarters post-construction	
Poor maintenance of soakaway pits can lead to more standing water, contamination of topsoils, and health risk to beneficiaries	Monitor and keep drains and soakaways clear of debris	% of soakaways NOT clear of debris or NOT properly maintained	Site visits	Monthly	Save the Children and the School Management Committee
	In areas that continuously have drainage issues, create soakaways or cover with gravel to reduce stagnant water surface area available for disease vectors Use riprap (cobbled stone), gravel or concrete as needed to prevent erosion of drainage structures			Quarterly maintenance checks for FOUR quarters post-construction (government counterparts, coordinated efforts with other USAID partners, or IP contracted monitors)	
Lack of erosion controls around WASH Infrastructure may lead to soil,	Implement a soil protection system around WASH infrastructure	% of WASH infrastructure WITHOUT leakages	Site visit	Monthly	Construction manager together with coordinators
	Use erosion control measures such as bales (pesticide free bales of agricultural waste) before storm events	% of WASH infrastructure with erosion controls		Quarterly maintenance checks for FOUR	

⁸ http://www.who.int/water_sanitation_health/diseases/WSH03.02.pdf

2.1.4 EMMP TABLE FOR MALAWI AMAA – MATANDA SITE – WATER SANITATION AND HEALTH ACTIVITIES

Environmental Risks or Potential Adverse Impacts	Environment and Climate Mitigation Measure(s) [adapted from AMAA IEE Conditions]	Monitoring Indicator(s)	Monitoring Method	Monitoring and Reporting Frequency	Responsible Parties
vegetation, and infrastructure degradation	Ensure there are NO leakages from WASH infrastructure	implemented around them		quarters post-construction (government counterparts, coordinated efforts with other USAID partners, or IP contracted monitors)	

2.1.5 EMMP TABLE FOR MALAWI AMAA – MATANDA SITE – POST-CONSTRUCTION ACTIVITIES

Environmental Risks or Potential Adverse Impacts	Environment and Climate Mitigation Measure(s) [adapted from AMAA IEE Conditions]	Monitoring Indicator(s)	Monitoring Method	Monitoring and Reporting Frequency	Responsible Parties
Hazardous abandoned structures or eroded soils around such structures can lead to health risks to beneficiaries and community members	Remove or bury all abandoned construction materials and rubble	Approximate weight of construction materials or demolition debris on-site NOT yet removed, repurposed, or buried	Site visits	Beginning when construction is complete and at the end of the construction period	
	Fill in and close all temporary latrines and septic systems		Approximating weight of construction waste		
	Restore the site through replanting, reseeding, and use of soil erosion control measures	% of all temporary latrines and septic systems NOT filled in and closed	Measuring areas		
		% of total area disturbed revegetated			